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F2V

## (54) Ball bladder orifice

(57) A ball bladder orifice comprises an orifice saddle 1 having a hollow body 11 and a flange portion 12 extending radially outwardly from the top end of the body for bonding to the inner surface of the ball bladder 2, and an inset tube 3 adapted for insertion into the orifice saddle as a tight fit. The inset tube 3 includes a radially outwardly extending flange 32 slightly below its top end for bonding to the ball bladder, a larger diameter portion 34 at its bottom end extending beyond the bottom end of the hollow body 11 and having abutment surfaces to abut against the bottom end of the hollow body, a needle hole 35 provided in its upper portion and a longitudinal fissure 36 provided in its lower portion, the needle hole and fissure 36 intercommunicating along the longitudinal axis.

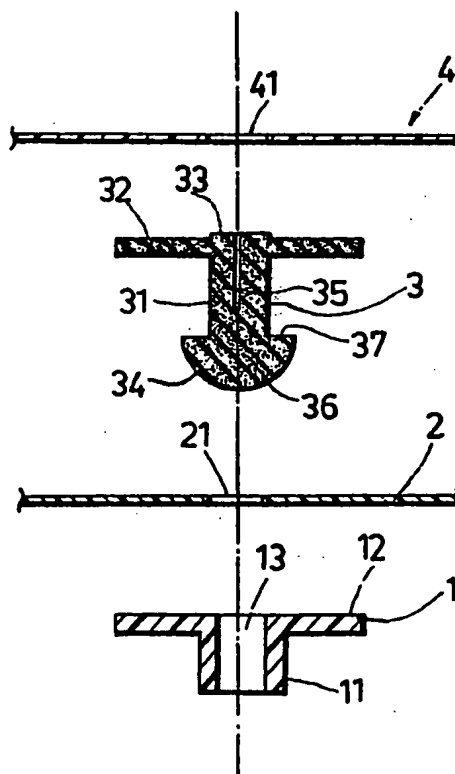


FIG. 2

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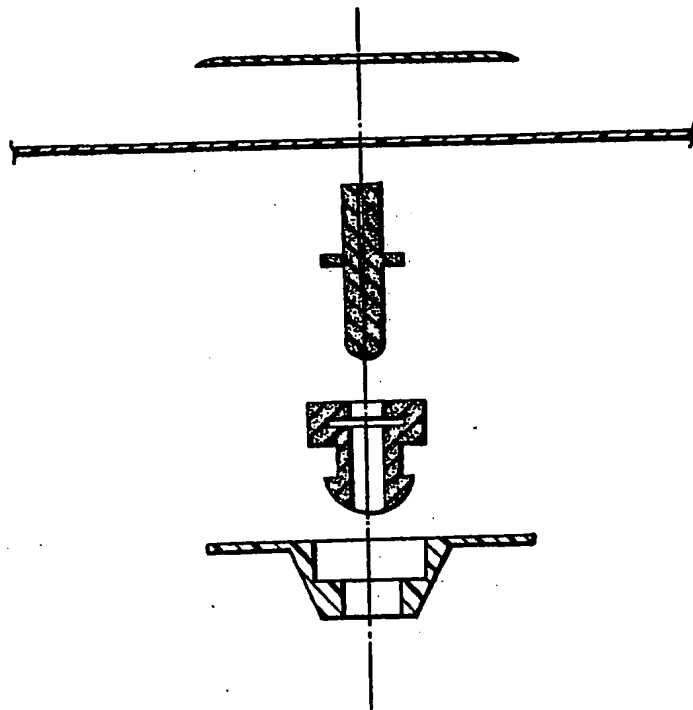


FIG. 1

PRIOR ART

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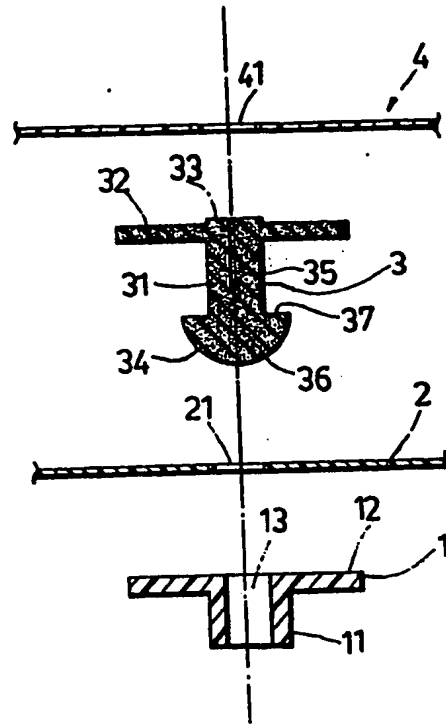


FIG. 2

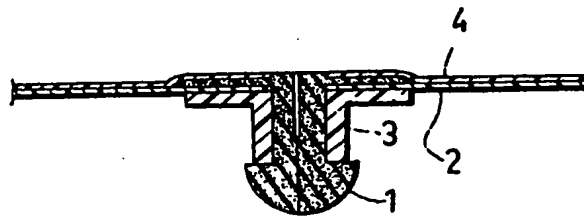


FIG. 3

## SPECIFICATION

### Ball bladder orifice

- 5 This invention relates to a ball bladder orifice. U.S. 4,320,778 discloses a ball bladder orifice construction, as shown in Fig. 1 of the accompanying drawings, which includes an orifice saddle, an orifice set, an inset tube and a washer, the inset tube being inserted in the orifice set and then positioned in the orifice saddle which is adhered to the inner side of the ball bladder by a high frequency heat welding process. Air can be introduced into the ball bladder by means of a needle nozzle of a pump which penetrates through a needle hole and a fissure in the inset tube. The fissure is restored to its gas tight position after the needle nozzle is removed due to the clenching action of the elastic orifice saddle and the orifice set. The above described construction has improved and sealing characteristics and the attachment of the ball bladder orifice as the orifice saddle is adhered to the inner side of the ball bladder. However, the construction thereof is so complicated that assembly can be difficult. It is desirable to provide an improved ball bladder orifice of simple construction to facilitate assembly.
- 10 The invention provides ball bladder orifices as set forth in Claim 1 or 3 and a ball bladder as set forth in Claim 4.
- Advantageously, the diameter portion of the inset tube may be of hemispherical shape.
- 15 The presently preferred embodiment will be particularly described, by way of example, with reference to the accompanying drawings, wherein;
- Figure 1 is a sectioned view of a ball bladder orifice in the prior art;
- Figure 2 is an exploded view of a ball bladder orifice constructed according to the invention; and
- Figure 3 is a sectioned view of the ball bladder orifice of Fig. 2, when assembled.
- Referring to the drawings, there is shown a portion of a ball bladder having an outer layer 4 and an inner layer 2. An orifice saddle 1 and an inset tube 3 are provided at holes 41 and 21 in the layers 4 and 2.
- 20 The orifice saddle 1 includes a clenching hollow body 11 having a uniform diameter bore 13 and a radially extending abutment flange 12 at the top end of the body 11 for bonding to the inner surface of the inner shell layer 2. The inset tube 3 is inserted into the bore 13 of the body 11 and extends beyond the bottom end of the body 11. It includes a cylindrical tube body 31 and a radially extending flange 32 extending from the periphery of the tube body 31 below its top end so that a portion 33 of the tube body 31 protrudes slightly. At the bottom end of the tube 31 is a larger diameter portion 34 of hemispherical shape having an abutment surface 37 for

abutting against the bottom end of the orifice saddle 1. Inside the inset tube 3 are a needle hole 35 and a fissure 36b which intercommunicate along the longitudinal axis of the tube 3.

- 70 The orifice saddle 1 receives the inset tube 3 as a tight fit, and the flange 12 and the flange 32 are bonded to the shell layer 2 and the shell layer 4 by high frequency heat welding. Due to the elastic characteristic of the rubber clenching body 11 and the inset tube 3, the fissure 36 is always kept gas tight. To introduce air into the ball bladder, the needle nozzle of the pump can be inserted through the needle hole 35 and the fissure 36.

### CLAIMS

1. A ball bladder orifice comprising:
  - 85 an orifice saddle having a hollow body and a portion extending radially from the top end of said body; and
  - an inset tube adapted for insertion into said orifice saddle as a tight fit, the inset tube including a radially extending flange slightly below its top end, a larger diameter portion at its bottom end extending beyond the bottom end of said hollow body and having abutment surfaces to abut against the bottom end of said hollow body, a needle hole in its upper portion, and a longitudinal fissure in its lower portion, said needle hole and said fissure intercommunicating along the longitudinal axis of the inset tube.
2. A ball bladder orifice as claimed in Claim 1, wherein the larger diameter portion of the inset tube is of hemispherical shape.
3. A ball bladder orifice substantially as herein described with reference to and as shown in Figs. 2 and 3 of the accompanying drawings.
4. A ball bladder having the ball bladder orifice of any one of the preceding Claims.
5. The ball bladder of Claim 4, and comprising an outer layer and an inner layer, the radially extending portion of the orifice saddle being inside of and bonded to the inner surface of the inner layer, and the radially extending flange of the inset tube being between the outer and inner layers.

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